

**Date:** 05.31.2011

**Agreement Number:** G11AC20061

**Project Title:** Appalachian Ohio Geospatial Data Partnership - Incorporation and Promotion of NSDI Cadastral Standards

## Final Report

### Organization:

Muskingum Watershed Conservancy District (MWCD)

1319 Third Street NW • P.O. Box 349

New Philadelphia, Ohio 44720

[www.mwcd.org](http://www.mwcd.org)



APPALACHIAN OHIO  
**GEOSPATIAL DATA**  
PARTNERSHIP

### Principal Investigator:

Thomas P. Fisher, AICP, GISP

MWCD Information Systems & Technology Manager

Phone: (330) 556-4802

[tfisher@mwcd.org](mailto:tfisher@mwcd.org)

### Collaborating Organizations:

Buckeye Hills – Hocking Valley RDD

Bret Allphin, Development Director

21330 St. Rt. 676, Suite D

Marietta, OH 45750-6799

Phone: 740.376.1028

[bretallphin@buckeyehills.org](mailto:bretallphin@buckeyehills.org)

Fairview Industries

Dr. Nancy von Meyer, P.E., PhD, PLS

PO Box 100

Pendleton SC 29670

Phone: (864) 646-2755

[nancy@fairview-industries.com](mailto:nancy@fairview-industries.com)

Guernsey County

Jim Mercer, GIS Coordinator

600 Wheeling Avenue

Cambridge, Ohio 43725

Phone: 740.439.6261

[jmerc@guernseycounty.org](mailto:jmerc@guernseycounty.org)

Morgan County

Bo Powell, GIS Coordinator

155 East Main Street

McConnelsville, Ohio 43756

Phone: 740.962.3171

[bo.powell@morgancounty-oh.gov](mailto:bo.powell@morgancounty-oh.gov)

Noble County

Barbara Matheny, Engineering Technician

220 Courthouse

Caldwell, Ohio 43724

Phone: 740.732.4400

[bmatheny@noblecountyohio.gov](mailto:bmatheny@noblecountyohio.gov)

Voinovich School for Leadership and Public Affairs

Dave Simon, GIS Manager

Ohio University, The Ridges Bldg. 22

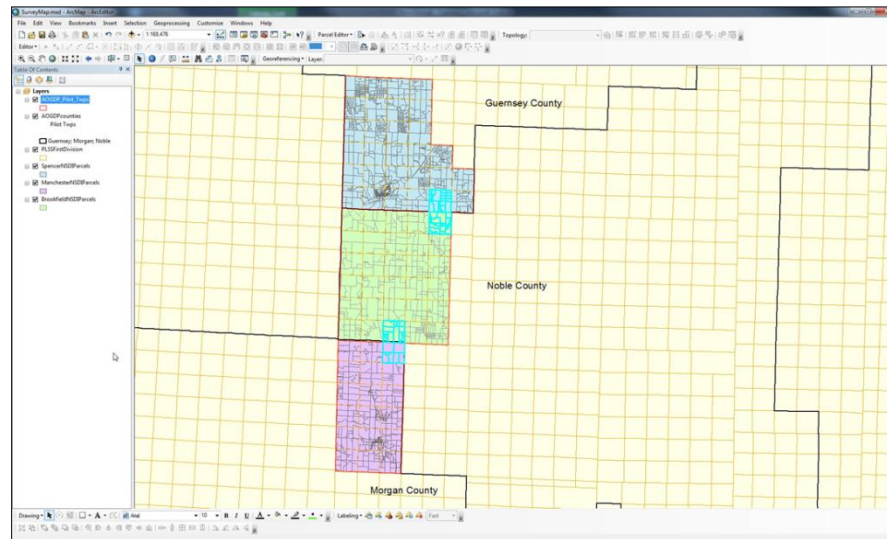
Athens, Ohio 45701

Phone: 740.597.2506

[simon@ohio.edu](mailto:simon@ohio.edu)

### Executive Summary:

The purpose of this project is for members of the Appalachian Ohio Geospatial Data Partnership to incorporate and promote FGDC standards from the very beginning of formal cadastral GIS development. The partnership utilized Esri's Local Government Information Model with common domains and definitions that streamline the cadastral maintenance process through automation and assist end users in their understanding and utilization of county land records. Over the past year the AOGDP has worked closely with Dr. Nancy von Meyer of the FGDC Cadastral Subcommittee to educate Partners on the standard, develop the approach for cadastral development using the standard, and implement the standard in three townships in three adjacent counties in southeastern Ohio.



**Figure 1 – Pilot Project Development Townships Completed. Using the Cadastral Data Standard Makes the Data Seamless**

Several workshops and one-on-one training sessions were conducted to develop county employee's GIS skill sets and to produce step-by-step guidelines. Instructional material developed during this project as well as other resources links for implementing the cadastral standard can be found at the following web address: <http://www.geospatialpartnership.org/geospatial-resources/aogdp-and-the-nsdi-cadastral-standard>.

The AOGDP also held meetings with elected officials and other cadastral data stakeholders to promote cadastral development using the NSDI standards. The Partnership promotes the use of geospatial standards as a means to increase stakeholder participation and support for financing GIS data development at the local level. This project has been a valuable vehicle to bring federal, state and local government together to improve the Public Land Survey System data and stewardship in Ohio. The most beneficial outcome of this project is providing an avenue for sharing data vertically among federal, state, regional and local levels of government, and horizontally with the private sector, non-profits and academia. To learn more about our Appalachian Geospatial Partnership, please visit [www.geospatialpartnership.org](http://www.geospatialpartnership.org).

## Project Narrative:

The two main goals of the Appalachian Ohio Geospatial Data Partnership's Cadastral Standards Project were to: 1) develop standardized cadastral data layers in three adjacent townships in three Ohio Appalachian counties and 2) use the pilot project results to present the incorporation, use, and benefit of standardized cadastral data, including strategies for financing, implementation and maintenance to identified cadastral stakeholders

### ***Pilot Project Development***

The pilot area included Spencer Township, Guernsey County; Brookfield Township, Noble County; and Manchester Township, Morgan County. (See Figure 1) The rationale behind the development of three adjacent townships in three adjacent counties illustrates how standardization is seamless in its application and demonstrates the benefits to a higher degree. Dr. Nancy von Meyer of the FGDC Cadastral Subcommittee consulted the AOGDP on the best approach to cadastral development using the standard. On September 20 – 21, 2011 the Partnership held our first two day training session at the Voinovich School for Leadership and Public Affairs at Ohio University, with Nancy von Meyer educating those in attendance on the Cadastral Standard and the Public Land Survey System in Ohio. The training session produced some positive results in addition to the development of the PLSS Section Corners and Simultaneous Conveyance

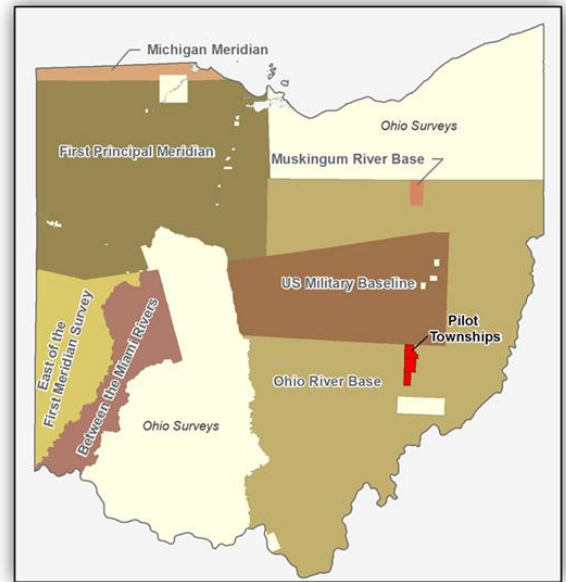


Figure 2 – Ohio's PLSS Meridians

Feature Classes. The training gave the group a sense of community by showing them that they are part of a greater effort. Also, our fruitful discussions shed light on needed corrections to the Ohio Meridian Codes in the Cadastral Data Content Standard (FGDC Standard 003) (See Figure 2). Partners that attended the two-day session included:

1. Consultant, Nancy von Meyer
2. Belmont County - Don Pickenpaugh
3. Buckeye Hills Hocking Valley RDD - Bret Allphin
4. Guernsey County - Jim Mercer
5. Morgan County - Bo Powell and Jeff McInturf
6. Muskingum Watershed Conservancy District - Tom Fisher, Brittany Converse and Skyler Dewey
7. Noble County, Mike Stritz and Mark Eicher
8. Ohio Geographically Referenced Information Program (OGRIP), Jeff Smith
9. Voinovich School for Leadership and Public Affairs Ohio University, Dave Simon

During the pilot phase of the project the steep learning curve related to Esri's ArcGIS software became evident, which triggered the leadership team to explore some new approaches to training. This is where the Partnership aspect of this group became even more apparent. Several members of the partnership have broad experience with Esri's ArcGIS platform and county staff members had limited to no experience with Esri products. The AOGDP decided to take a "divide and conquer" approach to parcel development in Esri's Local Government

Information Model (LGIM). Three teams were created, with each team consisting of a professional experienced in Esri software and a county staff member. The teams were:

- **Bret Allphin**, BH-HV RDD – Dev. Director and **Barb Matheny**, Noble County – Engineering Tech.
- **Dave Simon**, Voinovich School – GIS Manager and **Bo Powell**, Morgan County – GIS Coordinator
- **Tom Fisher**, MWCD – IS/IT Manager and **Jim Mercer**, Guernsey County - GIS Coordinator

Skyler Dewey of the MWCD and Jason Pyles of Buckeye Hills – Hocking Valley RDD, developed a step-by-step guide to parcel development in the LGIM which was used to train county staff in a one-on-one GIS training and continues to be a resource in the development of parcel development. This guide is available for download at <http://www.geospatialpartnership.org/geospatial-resources/aogdp-and-the-nsdi-cadastral-standard>.

Obtaining Noble County representation for the pilot project was difficult at first but through repeated conversations the County Engineer was convinced to provide a staff member to join our partnership’s efforts. The addition of Barbara Matheny from the Noble County Engineering staff, who also became a member of the AOGDP, was an important and critical step to move the pilot project forward in Noble County.

### **Promotion of the Benefit of Standardized Cadastral Data**

The Appalachian Ohio Geospatial Data Partnership was created in 2010 as a way to adopt and promote geospatial data standards in Appalachian Ohio between Federal, State, Regional & Local Governments, Academia, Non-Profits and Private Industry. People that are interested in supporting this mission or want to keep up-to-date with our progress are encouraged to visit our website [www.geospatialpartnership.org](http://www.geospatialpartnership.org). The site is also used to showcase our pilot project and provide resources for those interested in the Cadastral Standard. This site is also utilized as a GIS standards resource for Appalachian Ohio and the state of Ohio. (See Figure 3).

At its inception in 2010, AOGDP membership was limited to three counties and two regional organizations. Since then we have grown to include six counties, three regional organizations, one academic organization, one state agency, one federal agency and one public concern. The membership region has also increased to include all 32 officially designated Appalachian Ohio counties.

Training seminars on Parcel Fabric development in the Local Government Information Model (LGIM) were held twice at the Voinovich School for Leadership and

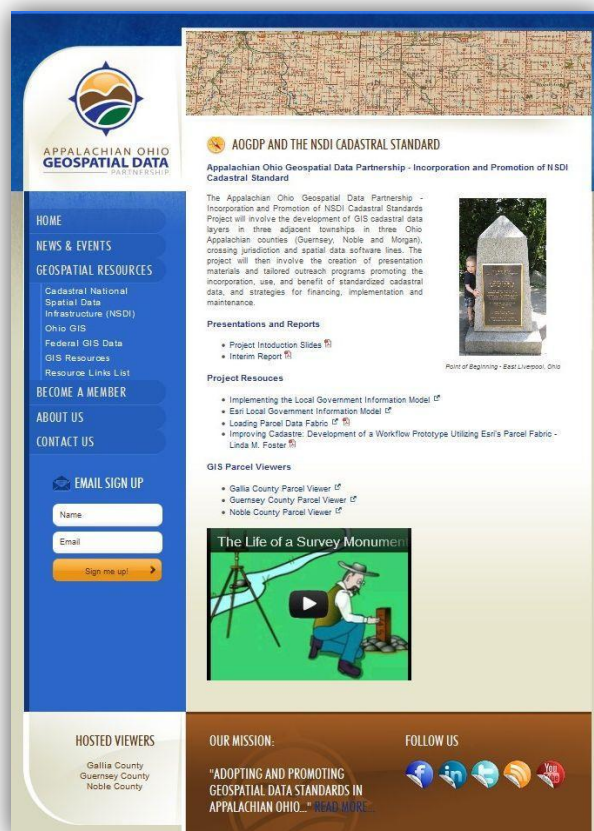


Figure 3 – Pilot Project web page on the AOGDP site.



Public Affairs in Athens Ohio. The first was held on September 20 – 21, 2011 and led by Dr. Nancy von Meyer. The second was held on March 7, 2012 and was led by Skyler Dewey from the Muskingum Watershed Conservancy District (MWCD). Both sessions were open to current members of the AOGDP to educate them on the cadastral data standard and development within Esri's LGIM.

Skyler Dewey and Jason Pyles completed step-by step instruction paper on entering survey data into ESRI's LGIM and is available <http://www.geospatialpartnership.org/geospatial-resources/aogdp-and-the-nsdi-cadastral-standard> .

Efforts to support the cadastral data standard using the LGIM led to a meeting with Ed Crane of Esri to discuss the AOGDP and how our model could aid in promoting standards in cadastral development and find new ways for local government to fund these efforts.

In the March 9, 2012 edition of Directions Magazine the AOGDP's first article was published titled "*The Appalachian Ohio Geospatial Data Partnership: Building Partnerships to Level the Playing Field*" (<http://www.directionsmag.com/articles/the-appalachian-ohio-geospatial-data-partnership-building-partnerships/230861>). The article distribution was expanded through the Ohio University's CE3 online publication.

Bret Allphin, Dave Simon and Tom Fisher presented the AOGDP and the effort to adopt and promote geospatial standards to the Ohio Geographically Referenced Information Program at the March 2012 meeting. GIS professionals from across Ohio attended this meeting.



Dr. Nancy von Meyer spoke to a joint workshop of URISA – PLSO May 9, 2012 regarding standards, more specifically the cadastral data content standard. She presented her work with the Public Land Survey System in Ohio and promoted the collaboration between GIS professional and Public Land Surveyors. Tom Fisher also spoke about the AOGDP's efforts of developing a regional parcel fabric using the cadastral data content standard. More than one hundred people attended from Federal, State, local, academic, non-profits and public concerns. The event was promoted by URISA Ohio, Public Land Surveyors of Ohio and AOGDP. (See *Figure 4*)

**Figure 4 – Dr. Nancy von Meyer presents the Cadastral Data Standard to a joint workshop of URISA – PLSO at ODOT in Columbus, Ohio**

Representatives from the Partnership met with elected officials (Engineers, Auditors, and Commissioners) in Guernsey, Morgan and Noble Counties to discuss cadastral standards, the efforts of the AOGDP and creative ways to finance GIS and cadastral development. As a result, Morgan County is moving forward with the RFP process to develop cadastral data following the NDSI Cadastral Data Standard. Guernsey County is hopeful that they can receive support to fund a county-wide cadastral using the standard.

The AOGDP has been selected to present the efforts and outcomes of this project at the following conferences:

- Esri User Conference in San Diego, CA. Thursday, July 26, 2012 from 8:30 AM - 9:45 AM in Room 28 E.
- URISA GIS-Pro Conference in Portland, OR. September 30 – October 4, 2012
- Ohio Statewide User Conference September 19-21, 2012 (AOGDP will have a booth at the conference).

### **Deviations from Original Proposal:**

Since the interim report there have been two unanticipated but beneficial deviations from the original proposal. The Partnership held several one-on-one training sessions with county staff to develop the skills for maintenance with the Esri Local Government Information Model. This was used to augment the training held at the Voinovich School at Ohio University. The second deviation was in the presentation of the cadastral standard to local officials. These meetings were conducted in close quarters without access to digital display devices. Many of these Appalachian counties may have found a formal presentation off-putting so more informal conversations regarding the benefits of a county cadaster and conformance with the NSDI standard were found to be more effective.

In the original proposal, the Appalachian Ohio Geospatial Data Partnership stated that the cadastral layer development would be performed by a qualified GIS consultant with proven experience in cadastral standard compliance, as well as a working knowledge of the representative Public Land Survey Systems used in this region of Ohio. The Partners and Nancy von Meyer met to discuss this approach. We questioned what would be learned by local government staff if a contractor delivered a completed, standard compliant, pilot project to counties without their understanding of how the GIS data layer was developed. There was the additional question regarding how, without the knowledge of the development process, could the counties complete and maintain their cadastral layers. Following the Chinese Proverb, "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime." we decided to teach the county land records people "to fish". The new approach shifted from contracting for cadastral development to training select county staff members how to develop cadastral data layers. Upon completion of training, county staff developed their township's cadastral layer, documenting the processes involved with the nuances inherent in their counties source data. By providing the tools to be successful, the Partnership has aided in the sustainability of data creation and maintenance in Appalachian Ohio.

### **Next Steps**

The next phase of our project is to promote the cadastral standard by presenting at the Esri UC, GIS Pro Conference, the Ohio Statewide Conference and other public forums. Our website will be utilized, as well as social media, in a coordinated outreach program. The Partners have begun efforts to develop cadastral data in Monroe, Scioto and Venton counties. Additionally, the AOGDP was awarded a GIS data inventory grant to populate the GIS Inventory (RAMONA) with Ohio's information. This is a logical next step in our efforts as a regional partnership. The AOGDP has also obtained non-profit status and are currently under review for 501(c)(3) status. Our Partnership's mission is to adopt and promote geospatial data standards in Appalachian Ohio between Federal, State, Regional & Local Governments, Academia, Non-Profits and Private Industry.

### **Feedback on Cooperative Agreements Program**

The CAP program is a much needed program especially for groups like the AOGDP. An idea to

incorporate GIS standards at the local level in Appalachia Ohio would have never materialized without a seed funding sources like this program. Providing the AOGDP with this grant positively impacted the way professionals in our underserved region view data standards. Providing grant funding to public agencies is also an important aspect of the program. Gaining the direct participation of the government agencies was critical to the success of this program. Funding outsourced development would not have resulted in the same level of success.

The most important outcome of this CAP project was the partnership between the FGDC Cadastral Subcommittee, represented by of Dr. Nancy von Meyer, and the AOGDP. Direct partnering of the FGDC Subcommittee with the project was a key to success. If the CAP grant did not exist, our common goal of implementing and promoting cadastral data standards would have never happened. Nancy is viewed by the AOGDP as more than a colleague she has become a friend to each member.

We believe we executed a successful project. Based on our experiences one thing the FGDC could do to make the CAP projects more successful would be to develop a collaboration “toolbox” or “dashboard”. This toolbox should include the ability to upload and download large GIS files, provide access to basic video or desktop sharing and conduct online meetings. The AOGDP is now spread out over 32 counties in Ohio. If the FGDC provided a collaboration toolbox where groups could share large files and easily conduct online meetings, it would help bring collaborators closer together and produce a better product.

It was a pleasure to work on the project and the AOGDP would like to thank the FGDC for believing in our group and our mission. Stay tuned because we have big plans for the future and we began with an FGDC grant.

## **Milestones**

June 2011

- Develop specifications for cadastral development training. Partner agency staff and OGRIP will be used to develop these specifications **Completed**
- Confirm selection of three townships for pilot cadastral development program. **Completed**
- Contract for training. **Completed**

July 2011

- Collect source documents for training and development. **Completed**

August & September 2011

- Training and development of cadastral pilot project. **Completed**

September 2011

- Ohio Statewide GIS Conference and Trade Show booth describing the NSDI Cadastral Standard and Pilot Project. **Completed**

October through December 2011

- Development of presentation materials. **Completed**
- Schedule presentations at meetings, conferences and public forums. **Completed**
- Creation of website outreach program. **Completed**

January 2012

- Partnering agencies begin outreach programs. **Completed**
- Website outreach program goes live. **Completed**

February 2012 and beyond

- Partnering agencies begin to develop and promote financing and maintenance strategies to ensure sustainability and growth of the Appalachian Ohio Geospatial Data Partnership past the grant period. **Completed**

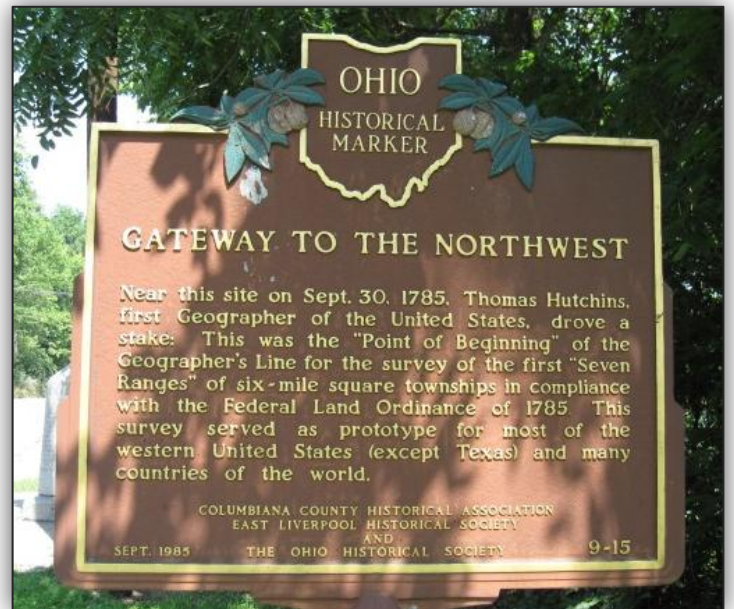
April 2012

- Prepare, finalize and submit required grant documents and reports. **Completed**

**Pictures from Appalachian Ohio Relevant to Cadastral Development in the Region:**



Plaque on the Monument at the Beginning of the U.S. Public Land Survey (Confluence of Ohio, Pennsylvania & West Virginia)



Historical Marker at the "Point of Beginning" Near East Liverpool, Ohio





The “Big Muskie” Bucket from a Coal Strip Mining Drag Line

The practice of stripping the land in Appalachian Ohio removed section corner monuments. Many have not been replaced.



Much of the coal stripped land in Appalachian Ohio has been reclaimed for recreation.



From coal to natural gas, five acre “pad sites” are created to fracture the Utica Shale under Appalachian Ohio. Cadastral data is in heavy demand throughout Appalachian Ohio.